DATA CENTER OPERATIONS BRANCH

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AMPERIF CACHE DISC PACK

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DATA SYSTEMS OPERATIONS BRANCH

OPERATOR PROCEDURES
AMPERIF CACHE DISK SUBSYSTEM

DCOB Procedure
No. 1-3

1.1 Scope

This document provides the operating procedures for the Amperif Cache Disk System. Additional information regarding the system may be found in the Amperif Cache Disk System "Operator Manual" and "Programmer Manual".

1.2 UPS Power-UP

From the control panel located on the front of each cabinet power-up the UPS:

a. Turn the AC INPUT and DC INPUT circuit breaker switches ON
b. Set UPS MODE switch to OUTPUT
c. Flip MANUAL BY PASS toggle switch

At this point the UPS should be operational with the UTIL ON and BY PASS ON lights illuminated. Before proceeding on with the Amperif Power-up procedure wait for approximately 10 seconds or until the UPS AC volt meter registers 115 volts and the DC volt meter registers 96 volts.

1.3 Amperif Cache Disk Power-Up Procedure

The Amperif system is a dual channel configuration consisting of three cabinets. The cabinet to the left of the center cabinet is termed the "A" channel, the one on the right is termed the "B" channel. The center or main control cabinet controls and interfaces with both channels. To power up the Amperif cabinets and associated disk drives:

a. Assure the UPS is in BY PASS mode.
b. Load disk packs and power-up applicable disk drives. Refer to appropriate operational procedures for drive assignments and vendor disk drive manuals for start-up procedures. Place all drives in "WRITE PROTECT" mode.

c. Turn on or assure the Data copy device is ON. The switch is located in the rear of the center cabinet on the data copy device. The device is in the lower portion of the cabinet.
d. At the power control panel located at the top back of the center cabinet, turn the BLWR, CU and CACHE switches ON. The BLWR switch should always be turned on prior to applying power to CU and CACHE.
e. At the power control panel of "A" and "B" CHANNEL cabinet (located at the top back of the cabinet) turn the BLWR and CU switches ON.

1.4 Resetting the Cache Disk System Without Data Restore

The following steps provide the procedures to reset the System after a normal power-down when the disk drives were in a by-pass mode. Paragraph 1.5 provides procedures for powering up the system after a power failure.

a. Verify/or set the four CACHE PREP ENABLE switches to the OFF (down) position. These switches are located on the front of the "A" and "B" Channel Cabinets.
b. Verify that the Data Copy drive is READY. The device is ready when the READY light comes on. The light is located on the front of the data copy drive.
c. When the Data Copy drive is ready, on the UPS unit TRIP the UPS OUTPUT toggle switch.
d. On the Amperif control panel set the CHANNEL ENABLE switch to BOTH.
e. Set the CHANNEL DISPLAY SELECT switch to A.
f. On the control panel keypad depress PROGM and 5. Verify that the message "INITIALIZE CACHE, ARE YOU SURE?" appears on the display. Depress YES, then the RESET key. The message "CHANNEL READY" will appear on the display.
g. Set the CHANNEL DISPLAY SELECT switch to B and repeat step "f". above for the "B" channel.
h. Depress BYPASS and ALL on the keypad. The character displayed on the display unit represents the status between the AMPERIF system and the disk drives. At this time the display should contain all "Bs" (Bypass) for disk drives on line. If not "Bs" repeat step "h".
i. Before proceeding on assure that all disk drives are ON, LOADED and IN WRITE PROTECT mode.
j. To initialize the Data Copy feature, depress ILD and C on the keypad and follow the Data Copy procedures as display on the control panel.
k. Place all disk drives IN WRITE/READ mode.

1. Set the disk drives to the DESIRED mode via the keypad. Depress CACHE followed by ALL or by the drives Logical Unit number. The same can be done for Write Thru (W's) or Bypass (B's) modes. To check the status of the drives DEPRESS DISP PRS (Present Status) on the KEYPAD.

m. Set "Time of Day" via the keypad. The system time is set based on a 24 hour clock, therefore 12:30 am is 0030, 2 am is 0200 and 2 pm is 1400 etc. To load the clock depress LOAD followed by Ø on the keypad. When the display appears keyin the time HHMMSS, where HH is hour(s), MM minute(s) and SS is second(s). Depress the ENTER key. To verify that the correct time has been entered, depress DISP followed by Ø on the keypad. The current time will appear on the display unit. If the time is incorrect repeat step "M".

n. Depress LOAD and 8 to set the control panel to Monitoring Level Clearance. This lockes the system to preclude unauthorized access to the control unit. To change security status check with the Shift Supervisor or the Senior Operator.

The Cache Disk System is now ready for normal operations.

1.5 Resetting the Cache Disk System With Data Restore

The following are the procedures to reset the Cache Disk System after a power failure.

a. Verify/or set the four CACHE PREP ENABLE switches to the OFF (down) position.

b. Verify that the Data Copy drive is READY. The device is ready when the READY light comes on. The light is located on the front of the data copy drive.

c. When the Data Copy drive is ready, on the UPS unit trip the UPS OUTPUT toggle switch.

d. On the Amperif control panel set the CHANNEL ENABLE switch to BOTH.

e. Set the CHANNEL DISPLAY SELECT switch to A.

f. Depress PROGM and 5 on the keypad. Verify that the message "INITIALIZE CACHE, ARE YOU SURE?" appears on the display. Depress YES, then the RESET key. The message "CHANNEL READY" will appear on the display.

g. Set the CHANNEL DISPLAY SELECT switch to B and repeat step "f" above for the "B" channel.

h. Depress BYPASS and ALL on the keypad. The character displayed on the display unit represents the status between the AMPERIF system and the disk drives. At this time the display should contain all "Bs" (Bypass) for disk drives on line. If not "Bs" repeat step "h".
i Before proceeding on assure that all disk drives are ON, LOADED and IN WRITE PROTECT mode.
j. To restore data to Cache from the Data Restore Drive depress ILD followed by B on the keypad and follow the restore procedures as directed by the control panel messages.
k. Place all disk drives in WRITE/READ mode.
1. On the keypad depress CACHE followed by ALL. Verify on the display that all applicable disks are CACHE mode. If not in CACHE mode perform step "1" over.
m. On the keypad depress BYPASS followed by ALL. Verify on the display that all applicable disk drives are in BYPASS mode, if not perform step "m" over.
n. On the Amperif control panel set the CHANNEL ENABLE switch to BOTH.
o. Se the CHANNEL DISPLAY SELECT switch to A.
p. Depress PROGM and 5 on the keypad. Verify that the message "INITIALIZE CACHE, ARE YOU SURE?" appears on the display. Depress YES, then the RESET key. The message "CHANNEL READY" will appear on the display.
q. Set the CHANNEL DISPLAY SELECT switch to B and repeat step "p" above for the "B" channel.
r. Initialize Data Copy unit, depress on the keypad ILD followed by C and follow the procedure displayed on the control panel.
s. Return all disk drives to WRITE/READ mode.
t. Set the disk drives to the DESIRED mode via the keypad. Depress CACHE followed by ALL (or by the Drive's Logical Unit number). The same can be done for Write Thru (Ws) or Bypass (B) modes. To check the status of the drives DISP PRS (Present Status).
u. Set "Time of Day" via the keypad. The system time is set based on a 24 hour clock, therefore 12:30 am is 0030, 2 am is 0200 and 2 pm is 1400 etc. To load the clock depress LOAD followed by Ø on the keypad. When the display appears keyin the time HHMMSS, where HH is hour(s), MM minute(s) and SS is second(s). Depress the ENTER key.
v. Depress LOAD and 8 to set the control panel to Monitoring Level Clearance. This locks the system precluding unauthorized access to the control unit. To change security status check with the Shift Supervisor or the Operations Technician.

The Cache Disk System is now ready for normal Operations.

1.6 Power Failure

The CACHE Disk System has the capability save all CACHE and System Data on the Data Copy Drive pending power loss. Three Data Copy Lights are provided to monitor the data copy procedure. These are located in a small box that is installed on top of the control unit. The first light, the yellow POWER FAIL light, denotes that power has been lost, and the system is running off the battery. If power is restored within one minute, this light will go off and the system returns to normal operation. If power is lost for more than one minute, the Cache Disk System assumes that power may not be restored before the battery is exhausted and it is necessary to save all Cache and system data on disk to prepare for complete power loss. The second light, the green DATA COPY light, denotes when this procedure is in process. This takes only a few seconds. The third light, the red SHUT DOWN AUTH light, denotes when data copy is complete, and the system is prepared for complete power loss. The system may now be powered down safely.

When powering up after a power failure, all Cache data may be restored to the pre-power failure state. This is done by doing a Data Restore (the ILD-B function) after the cabinets have been reset and the drives are powered up.

1.7 Manual Power Down

The following step apply when manually powering down the entire Cache Disk System. To perform these steps the computer must be disabled or inactive before starting these procedures.

1.7.1 Power Down With Out Data Copy

Power down w/o data copy is used when the status of all disk drives is BYPASS.

a. Depress BYPASS and ALL on the control panel keypad. The status of the disk drives will be display on the control panel. All applicable disk drives should be represented with a "B" (bypass). If not perform the step over.
b. Place all disk drives in WRITE PROTECT mode.
c. At the power control panel located in the top back of the two side cabinets turn OFF the CU and BLWR switches.
d. Turn OFF the CU, CACHE, BLWR and the DATA COPY drive switches in the main control cabinet. The switches are located at rear top and bottom of the center cabinet.
e. On the UPS set the MODE SWITCH to OFF and turn the AC INPUT and DC INPUT switches OFF.
f. If desired the disk drive units may be powered down.

1.7.2 Power Down With Data Copy

These procedures are used if the status of the disk drive are CACHE or WRITE THRU. The computer must be disabled or inactive, before starting the power down procedures.

a. Place all disk drives into WRITE PROTECT mode.
b. On the control panel depress ILD followed by C. Answer YES to the message on the control panel. This will copy the CACHE to the data copy device.
c. At this point ALL the data in CACHE is on the Data Copy Drive. Place the Data Copy Drive in WRITE PROTECT. The SYSTEM is now ready to be power down.
d. At the power control panel located in the top back of the two side cabinets turn OFF the CU and BLWR switches.
e. Turn OFF the CU, CACHE, BLWR and the DATA COPY drive switches in the main control cabinet. The switches are located at rear top and bottom of the center cabinet.
f. On the UPS set the MODE SWITCH to OFF and turn the AC INPUT and DC INPUT switches OFF
g. If desired the disk drive units may be powered down.